7.2A: Vitamin A

Vitamin A is a fat-soluble vitamin that is stored in the liver. There are two types of vitamin A that are found in the diet.

- Preformed vitamin A is found in animal products such as meat, fish, poultry and dairy foods.
- Pro-vitamin A is found in plant-based foods such as fruits and vegetables. The most common type of pro-vitamin A is beta-carotene. Pro-vitamin A must be converted into active vitamin A by the body.

Vitamin A is also available in dietary supplements. It most often comes in the form of retinyl acetate or retinyl palmitate (preformed vitamin A), beta-carotene (pro-vitamin A) or a combination of preformed and pro-vitamin A.

Function of Vitamin A

Vitamin A helps form and maintain healthy skin, teeth, skeletal and soft tissue, mucus membranes, and skin. It is also known as retinol because it produces the pigments in the retina of the eye. Vitamin A promotes good vision, especially in low light. It may also be needed for reproduction and breast-feeding. Retinol is an active form of vitamin A. It is found in animal liver, whole milk, and some fortified foods. Carotenoids are dark-colored dyes (pigments) found in plant foods that can turn into a form of vitamin A. There are more than 500 known carotenoids. One such carotenoid is beta-carotene.

- Beta-carotene is an antioxidant. Antioxidants protect cells from damage caused by substances called free radicals. Free radicals are believed to contribute to certain chronic diseases and play a role in the aging processes.
- Diets containing food sources of carotenoids such as beta-carotene have been shown to reduce the risk for cancer.
- Beta-carotene supplements (isolated Beta-carotene in concentrated form) do not seem to reduce cancer risk.
Video \(\PageIndex{1}\): This video connects health-conscious individuals with important news and information in the fast-paced world of health. From recalls and outbreaks to diet, nutrition and fitness we cover everything you need to know about health, every day.

Food Sources of Vitamin A

Vitamin A comes from animal sources, such as eggs, meat, fortified milk, cheese, cream, liver, kidney, cod, and halibut fish oil. However, all of these sources, except for skim milk that has been fortified with Vitamin A, are high in saturated fat and cholesterol. Some good sources of vitamin A are:

- Eggs (preformed vitamin A)
- Milk and other dairy products (preformed vitamin A)
- Orange and yellow vegetables and fruits (pro-vitamin A)
- Other sources of beta-carotene such as broccoli, spinach, and most dark green, leafy vegetables (pro-vitamin A)

The more intense the color of a fruit or vegetable, the higher the beta-carotene content. Vegetable sources of beta-carotene are cholesterol-free.

Side Effects of too much or too little Vitamin A

If you do not get enough vitamin A, you are at increased risk for eye problems. These include reversible night blindness and then non-reversible corneal damage known as xerophthalmia. Lack of vitamin A can lead to hyperkeratosis or dry,
Scaly skin. If you get too much vitamin A, you can become sick. Large doses of vitamin A can also cause birth defects.

Acute vitamin A poisoning most often occurs when an adult takes several hundred thousand IUs of vitamin A. Symptoms of chronic vitamin A poisoning may occur in adults who regularly take more than 25,000 IU a day. Babies and children are more sensitive to vitamin A, and can become sick after taking smaller doses of vitamin A or vitamin A-containing products such as retinol (found in skin creams). Large amounts of beta-carotene do not cause harm. However, high levels of beta-carotene can turn the skin yellow or orange. The skin color will return to normal once you reduce your intake of beta-carotene.

**Recommendations for Vitamin A**

The best way to get the daily requirement of essential vitamins is to eat a wide variety of fruits, vegetables, fortified dairy foods, legumes (dried beans), lentils, and whole grains.

The Food and Nutrition Board of the Institute of Medicine -- Dietary Reference Intakes (DRIs) Recommended Intakes for Individuals of Vitamin A:

**Infants (average intake)**

- 0 to 6 months: 400 micrograms per day (mcg/day)
- 7 to 12 months: 500 mcg/day

The Recommended Dietary Allowance (RDA) for vitamins is how much of each vitamin most people should get each day. The RDA for vitamins may be used as goals for each person.

**Children (RDA)**

- 1 to 3 years: 300 mcg/day
- 4 to 8 years: 400 mcg/day
• 9 to 13 years: 600 mcg/day

Adolescents and Adults (RDA)

• Males age 14 and older: 900 mcg/day
• Females age 14 and older: 700 mcg/day (770 during pregnancy and 1,300 mcg during lactation)

How much of each vitamin you need depends on your age and gender. Other factors, such as pregnancy and your health, are also important. Ask your health care provider what dose is best for you.

References